



Capture the Sun



WITH

Hydro-Flo Heating



***Hydro-Flo* Heating**

This simple equipment brings to your home the comfort, convenience and economy benefits of a *forced hot water system*—today's preferred heating method.



Radiant heat from the sun keeps her warm.

Radiant

Comfort Heating

with Forced Hot Water

Your home may be distinguished for its charm and beauty—its efficient arrangement—its reflection of your own personality . . . but you will get little pleasure from it if it is lacking in *winter comfort*! No other decision will have more bearing on future satisfaction than your selection of a heating system.

Remember, that for genuine comfort, there is no substitute for *Radiant Heat*. This is the kind of warmth you feel in a ray of sunshine . . . mellow, penetrating and comforting. The heating system you select should be able to provide it!

What is Radiant Heat?

The sun—or any heated object—gives off Radiant Heat Rays. These rays do not raise the temperature of the air they travel through but they *do* warm every solid surface they strike against.

The effect of Radiant Heat Rays is clearly demonstrated on days when the sun is bright but the air is cool. When standing in the sunshine, you are comfortably warm—moving into the shade causes a sensation of chilliness. You have been shut off from the sun's Radiant Rays and immediately notice a change.

How Radiant Heat Affects Your Well-Being

Comfort is not a matter of supplying heat to the body—*your body manufactures its own heat*. This heat must be dissipated at a certain rate. If it is lost too rapidly, you feel cold—if too slowly, you are uncomfortably warm.

Body heat is dissipated in three principal ways . . . by Radiation, Convection and Evaporation. The Radiation loss is the heat given off by the warm body to surrounding colder surfaces. The Convection loss is the heat carried away by the passage of air over the skin and clothing. The Evaporation loss is the heat

used in converting moisture on the surface of the body into vapor.

Scientific investigation shows that maximum comfort conditions are attained when the body heat loss by Radiation is approximately 47°. Since this is nearly one half of the total heat loss, it must be carefully controlled to maintain the ideal condition. If the percentage becomes greater, a sensation of chilliness is experienced, even though the air temperature is appreciably raised.

Therefore, the first function of a heating system is to establish conditions within the home which keep the radiant heat loss from the body in the correct proportion. This is done most effectively by *warming the walls, floors and ceilings!*

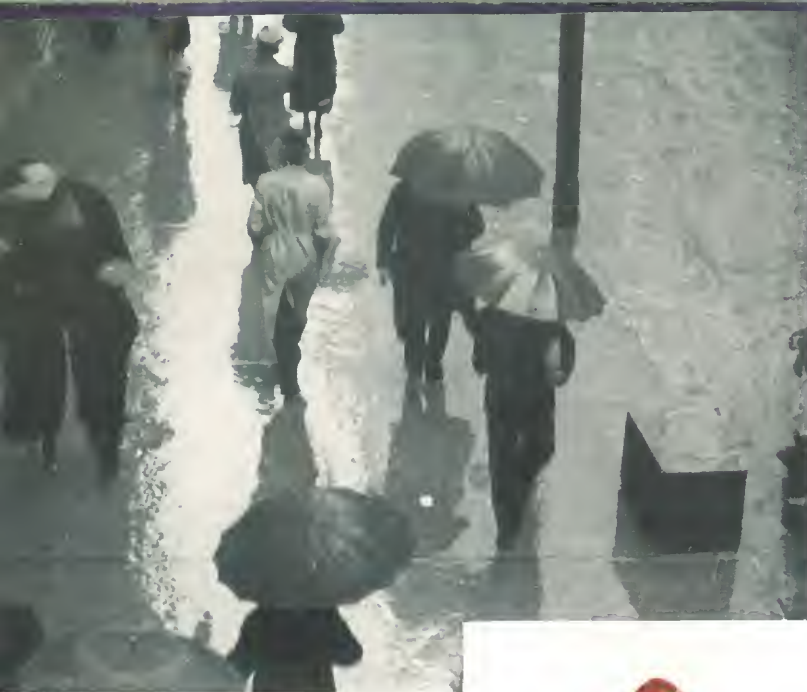
A heating system which introduces a source of radiant heat into every room best accomplishes this purpose. Remember that Radiant Heat Rays flow from warm to cooler surfaces . . . hence walls and floors are quickly warmed by Radiant Rays from the heating units.

Forced Hot Water Preferred for Radiant Heating

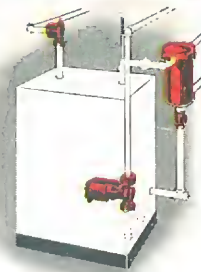
Engineering authorities agree that the most satisfactory way to supply heat to the heat distributing units of a Radiant Heating System is with *forced hot water*. The ease with which water can be heated, circulated and controlled is the reason for this preference.



Warm in the sunshine—cool in the shade, even though air temperature is the same.



Hydro-Flo Heating keeps your home uniformly comfortable in any kind of weather.



Why a B & G

MODULATED HEAT

B & G *Hydro-Flo* Heating is flexible—automatically matches the heat supply to the weather.

Your heating system is designed to meet the coldest weather which occurs in your neighborhood. Since the severest condition may occur only a few days of the heating season, it is obvious that the amount of heat supplied must be graduated to meet milder weather. Otherwise, your home will be overheated most of the time, with accompanying discomfort and fuel waste.

In other words, a heating system should be able to *automatically* increase or decrease the amount of heat it is producing. On a mild day, it should throttle itself—on a very cold day, it should accelerate to meet the increased demand for heat.

The characteristics of water make it the ideal heating medium. When circulated by a pump, as in a B & G *Hydro-Flo* System, it can be easily controlled so that the amount of heat delivered increases or decreases in accordance with the weather.

For example, in mild weather, heat escapes more slowly from your home, so that the Booster pump and burner are called into action only at long intervals. Because of infrequent demands for heat, the boiler water temperature gradually becomes lower. When the thermostat finally calls for heat, the Booster starts circulating this low temperature water. Since the system itself is filled with even cooler water, the average temperature of the circulating water is quite low.

It is hot enough, however, to quickly supply the small heat requirements of a mild day. The Booster and burner are, therefore, shut off by the thermostat before the water throughout the system becomes hot enough to cause overheating.

On severely cold days, the operating periods of the Booster and burner are longer, permitting the average temperature in the system to be built up to satisfy the heavier heat demand. All intermediate heat requirements are similarly handled in a smooth cycle which ends the over and under-heating so prevalent in other types of heating systems.

Hydro-Flo System Provides

Radiant Heating at its Best

CONSTANT HEAT

B & G Hydro-Flo Heating is not "all on"—"all off"
... it provides a constant flow of warmth which
prevents air stratification.

Everyone has had the experience of feeling chilly in a room in which the thermometer indicated a temperature of 70° or more. This condition is called "Cold 70" by engineers and is due to the air settling in layers of differing temperatures. The layer on the floor is cold, with successive layers becoming increasingly warm.

This means that while the temperature at shoulder height may be comfortable enough, you are literally wading in a pool of cold air. *And if your feet are cold, you're cold all over!*

Air stratification is usually a fault of heating systems which have no "carry over" of heat. In that type of system, when the thermostat is satisfied and the firing device shuts off, heating immediately ceases. With no source of heat in the room, the air tends to settle in layers. Cold air sinks to the floor and warm air rises to the ceiling.

"On and off" heating means hot heads and cold feet.

B & G Hydro-Flo Heating eliminates this uncomfortable condition because of the nature of the heating medium. Water is slow to cool. Therefore, when the Booster has pumped enough hot water through the system to bring the temperature up to the desired degree and then shuts off, *the radiators do not cool quickly!*

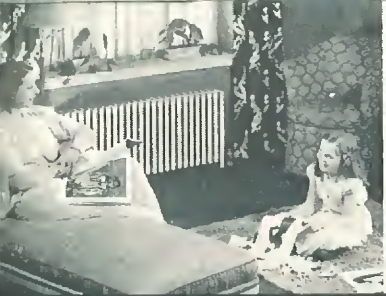
As long as there is heat in the radiators, there is a continual circulation of warm air about the room which prevents stratification. The moment room temperature drops slightly, the thermostat starts the Booster and the full requirement of heat is restored.

B & G Hydro-Flo Heating is completely automatic—and a supply of heat is always ready for instant action. Any one who has experienced the discomforts of sudden temperature drops during the Spring and Fall will welcome this quick heating feature.



The constant heat supplied by a B & G Hydro-Flo System keeps floors warm and room temperature uniform.





Best for Radiators



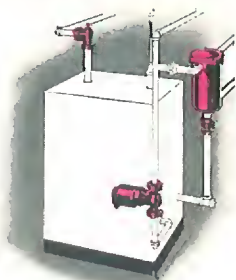
... Baseboards



... Radiant Panels



... Convectors



Why a B & G Hydro-Flo System

CORRECT PLACEMENT OF HEATING UNITS

Next in importance to the *quality* of heat comes the location of the heating units. In a B & G *Hydro-Flo* Heating System, the radiators, or other heat distributors can be placed to meet cold where cold comes in.

The first step in achieving ideal comfort conditions in the home is to warm the walls, floor and ceiling. Merely heating the air is not sufficient.

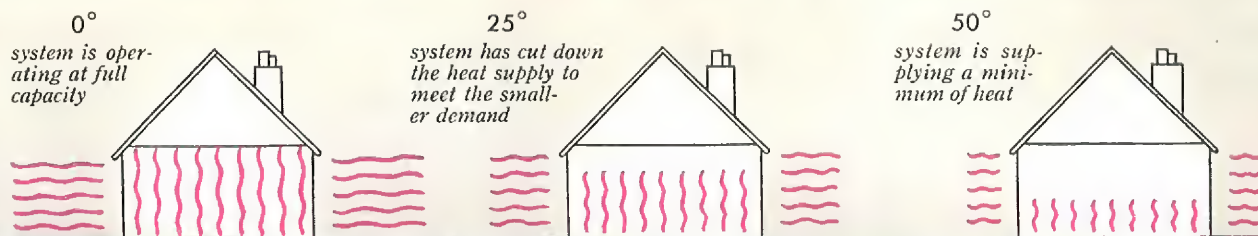
The reason for this is obvious. It has been previously pointed out that Radiant Heat Rays move from warm to cooler surfaces. It has also been shown that if the escape of Radiant Heat from the body is too rapid, chilly discomfort results. That is exactly what happens if room surfaces are cold. Under this condition, your body transfers its Radiant Heat to the cold walls too rapidly for comfort. *Your body is literally acting as a heating plant itself!*

The exposed outside walls are naturally the coldest and, therefore, are the vital points to be warmed. In addition to rapid heat loss through the outer walls, the windows are even larger dissipaters of heat. Cold air not only leaks in around the window casings, but the window glass itself is so poor an insulator that a wave of cold air literally pours down the pane onto the floor.

With a B & G *Hydro-Flo* System in your home, radiators, baseboards or convectors can be placed where they belong—along the exposed cold walls and under the windows. The walls are thus properly warmed so as to prevent excessive Radiant Heat loss from room occupants, and cold air leaking in around the windows is blocked off by a blanket of warm air. Consequently, there is no icy area around the windows—every inch of every room is livable space.



The outer walls of your home are the areas where heat escapes and cold comes in. They must be warmed before indoor comfort can be attained. A Radiant Heating System does this more effectively than any other method.



The B & G Hydro-Flo System automatically adjusts the heat supply to every change in the weather . . . more heat in cold weather, less in mild weather

Provides *Radiant Heating at its Best*

ECONOMICAL HEAT

B & G Hydro-Flo Heating saves money in three ways . . . fuel economy, long life, negligible maintenance cost.

In considering any type of heating system, there are three costs to examine—original—operating—and maintenance. Many home builders have sadly discovered that a system which costs the least to begin with often is the most expensive in the long run. From every standpoint, *there is no economy in non-durable, inefficient equipment!*

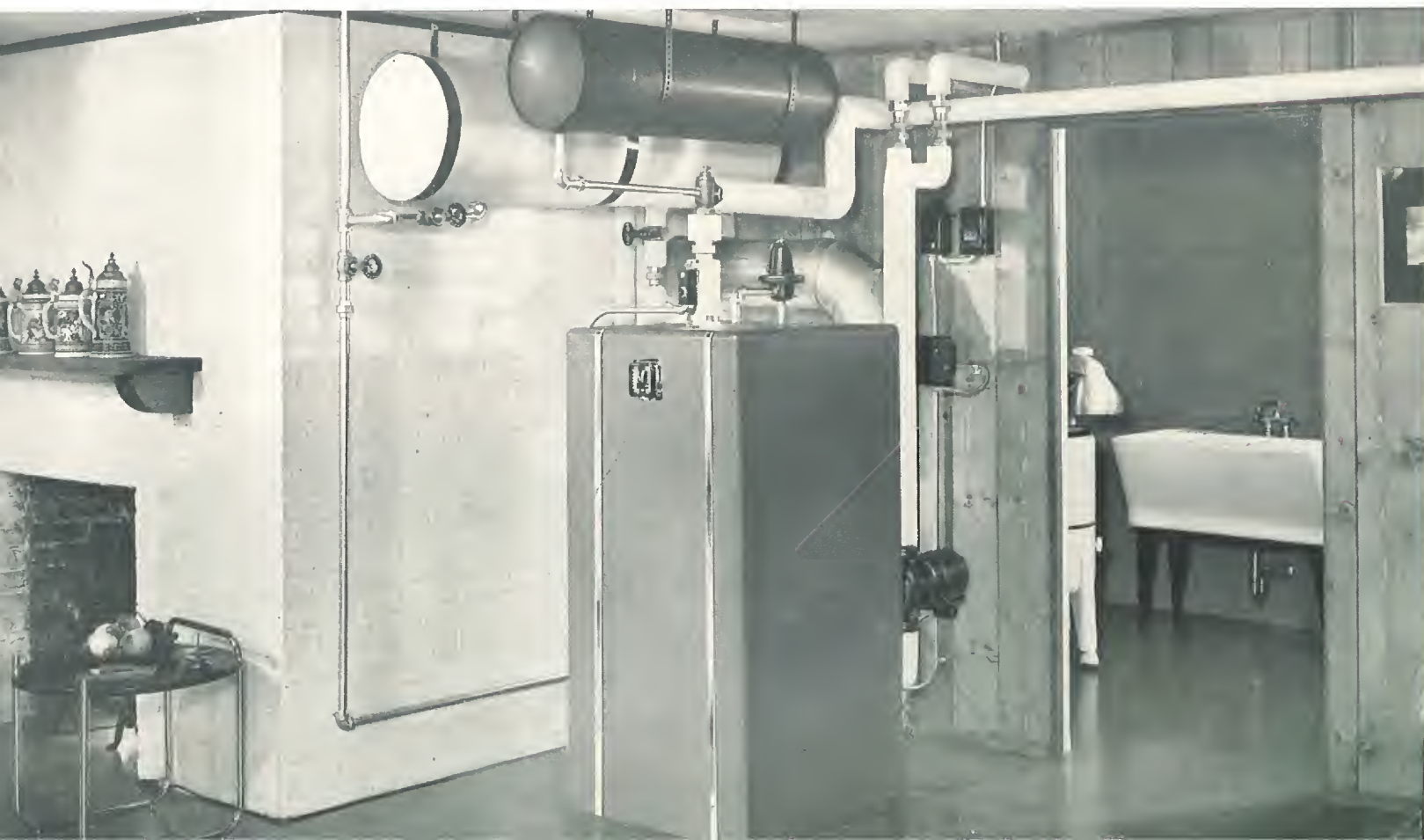
B & G Hydro-Flo Heating is known the country over as the money-saving way to have luxurious comfort. First, because of its accurate modulation of the heat supply, it conserves fuel with miserly economy. Only enough is burned to compensate for the actual heat loss from the building.

This means that in Spring and Fall, or on mild winter days, there is no fuel wasted to produce unnecessary heat. You never find the owner of a Hydro-Flo System opening windows to bring the temperature down to a livable degree.

Economy is also assured by low maintenance cost. The operating equipment of a B & G Hydro-Flo System is very simple and has been proved completely dependable in thousands of homes.

Remember, too, that a boiler lasts for years without need for frequent repairs. The heat distributors—whether radiators, baseboards, radiant panels or convectors—are virtually indestructible.

Typical modern basement with B & G Hydro-Flo Heating System installed.

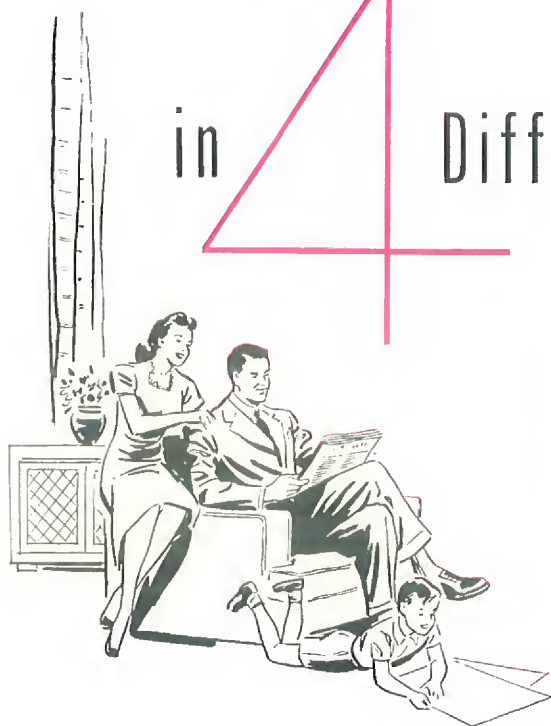


You Can Have Hydro-Flo Heating

in



Different Ways



Floor installation of Radiant Panels

RADIATORS

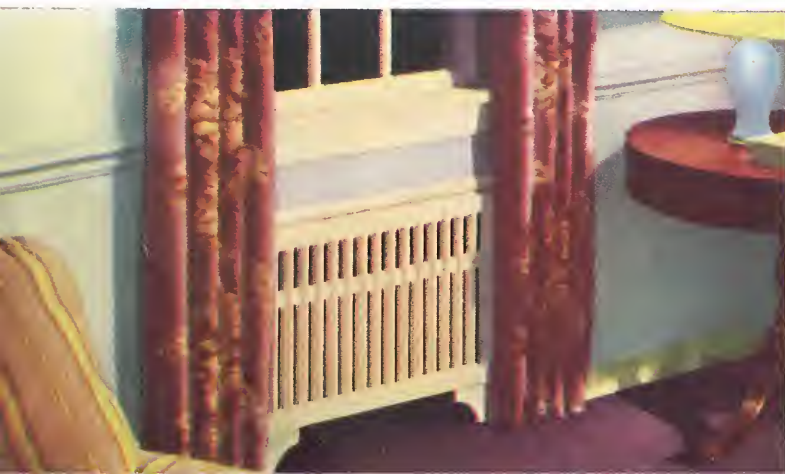
There is little resemblance between the bulky cast iron radiator of a few years ago and the modern streamlined type of heating unit. Clever stylists, working in cooperation with skilled engineers have made amazing improvements in both appearance and efficiency. Today's radiator is a slim beauty—40% smaller—but gives off as much heat as its cumbersome predecessor.

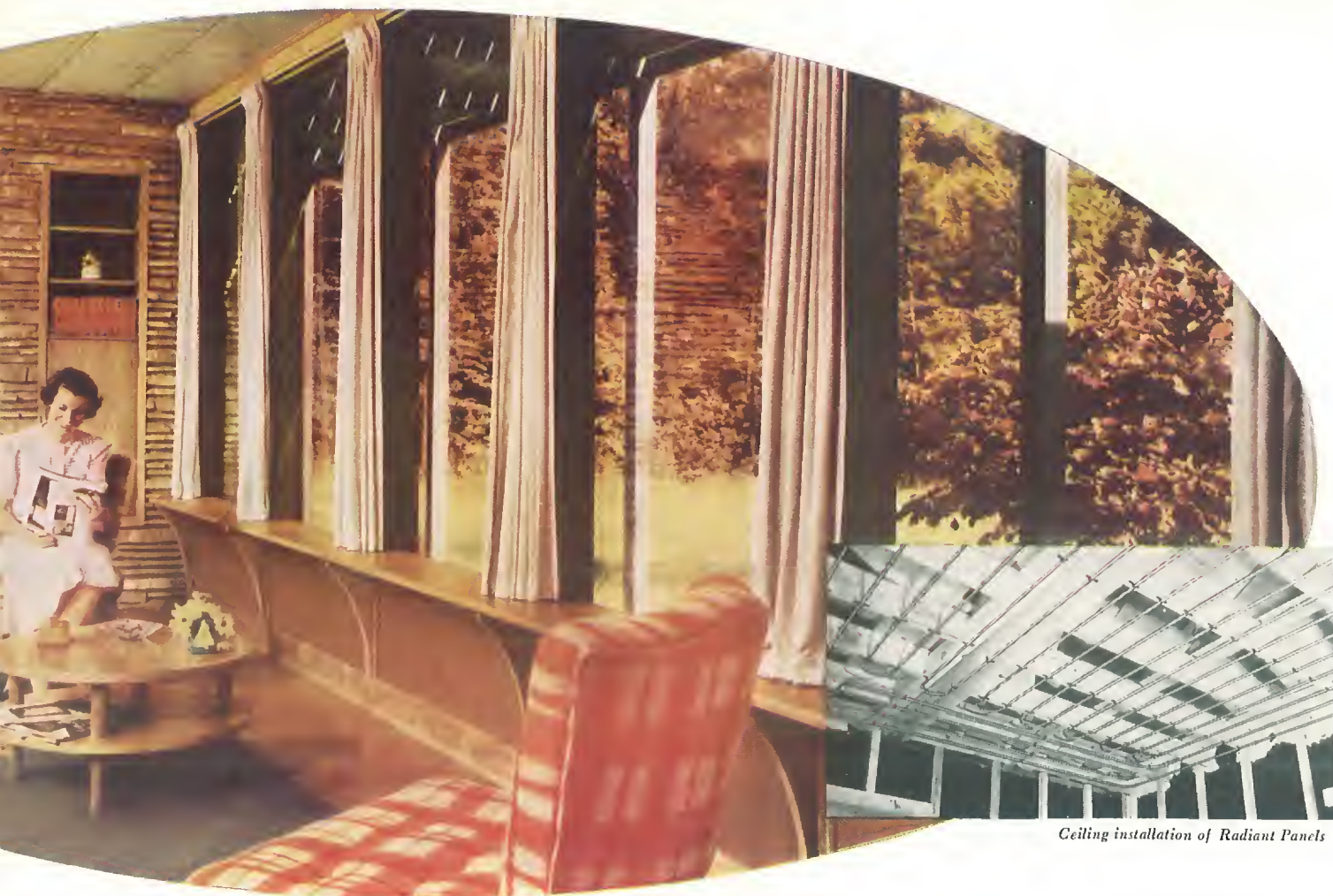
Modern radiators can be installed as free-standing, recessed in the wall or as radiant front units with ornamental grilles.

BASEBOARDS

Baseboards are one of the latest developments in radiant heat distributing units. The Baseboard unit closely resembles the conventional wooden baseboard which it replaces. Hot water from the boiler circulates through the Baseboard unit, providing a source of heat at ankle height. Tests have shown that Baseboard units produce a very uniform floor-to-ceiling temperature.

These unobtrusive heating units are easy to install and reasonable in price. They can be used for modernizing old homes as well as installed in new buildings.





Ceiling installation of Radiant Panels

RADIANT PANELS ARE COMPLETELY CONCEALED

Perhaps no recent innovation in home building has created as much interest as Radiant Panel heating. The many physiological, decorative and economy advantages of this method of heating have merited its popularity.

The system is completely concealed. Heated water is circulated through pipe coils installed in the floor, walls or ceiling, making the entire area a radiant surface. Radiant rays from the panels warm the room and the objects in it either directly or by reflection and re-radiation from one surface to another. The warm floors

and draftless conditions in radiant heated homes contribute materially to comfortable, healthful living.

Radiant panel heating is not expensive to install and is famous for fuel economy. The mild, gentle warmth given off by the panels does not create strong air currents to stir up dust—hence walls, ceilings and draperies stay bright and clean much longer.

The way to have Radiant Panel heating at its best is with a B & G *Hydro-Flo* System. In both theory and practice, forced hot water has proved to be the most satisfactory method of supplying heat to the panels.

CONVECTORS

Convectors have been streamlined into remarkably inconspicuous heating units. They are made with a removable front, having an arched opening at the bottom and a grille at the top. Air enters the convector through the arched opening at the floor and is heated as it passes through the interior heating unit. Before entering the room, the warmed air heats the enclosure front, converting it to a radiant heating panel.

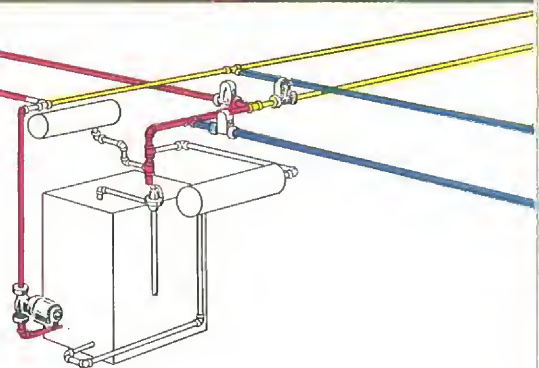
The front panel may be painted to match any decorative treatment and when completely recessed can be papered exactly like the rest of the room.





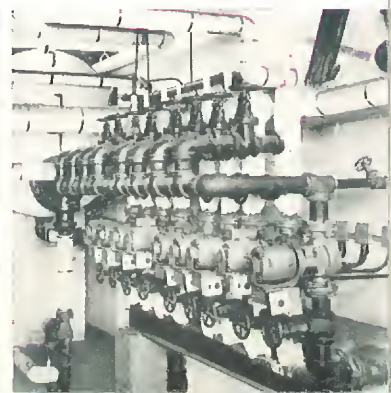
Illustration by courtesy of Better Homes and Gardens.

This is a diagrammatic sketch of a typical 3-zone Hydro-Flo System. One zone serves the living quarters, another the bedrooms and the third supplies heat to the garage.



Zoning Permits *Different Temperatures in Different*

Garden apartment with nine-zone B & G Hydro-Flo System. Boiler room photo shows the Boosters used to control zone temperatures.





Sections of the Home



Even keeps sidewalk and driveway clear of snow

A pipe coil under the sidewalk or driveway can be installed as a separate zone and supplied with heated water from the boiler. When it starts to snow, the flip of a switch starts the Booster which circulates hot water through the coil, warming the concrete and melting the snow.

Or, an electric eye can be installed at the edge of the walk, which automatically starts the Booster when about one-half inch of snow has fallen.

Zoning your B & G *Hydro-Flo* System will give you the last word in temperature control, comfort and fuel-economy. With this system, zoning is an inexpensive procedure, because forced hot water heating is most readily adaptable to this form of temperature control.

A zoned system enables you to have different temperatures in different parts of the house. For example, your living room and dining room can be kept warmer than the bedrooms, which are used principally for sleeping and do not require as much heat.

Or, in a long ranch-type house, the wing exposed to cold north winds can be zoned to receive more heat than other sections. The garage, too, can be placed on a separate zone, with just enough heat supplied to keep the temperature above the freezing point.

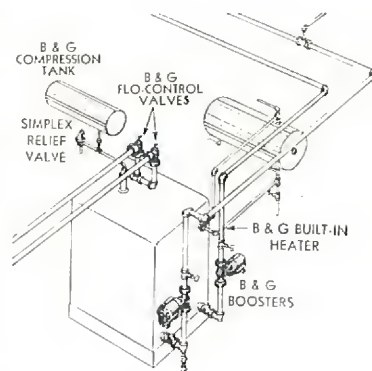
Zoning solves the problem of apartment house heat control

The heating of apartment houses has always been notoriously hard to control, because of inability to properly locate the thermostat. By zoning the heating system, each apartment can be placed on a separate zone and controlled by its own thermostat. Each family can, therefore, have the temperature it prefers.

In addition to improved comfort, it is obvious that zoning can make a material saving in fuel. Fuel is not wasted in furnishing an over-supply of heat to sections of the building which require little heat, which is frequently the case with conventional heating systems.

Zoning a *Hydro-Flo* System requires little additional equipment. The pipe mains are divided into as many circuits as required by the desired number of zones. The flow of water to the zones is governed either by a thermostatically - controlled B & G Booster Pump, installed in each zone pipe circuit, or by a single Booster and a motorized valve for each zone.

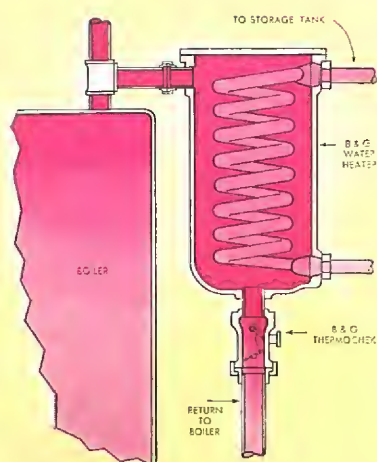
In the latter case, when the thermostat in any zone calls for heat, the Booster starts and the respective motorized valve opens, permitting heated water to flow into the zone.



This diagram shows typical boiler connections and equipment for a 2-zone Hydro-Flo Heating System with each zone controlled by a B & G Booster pump.

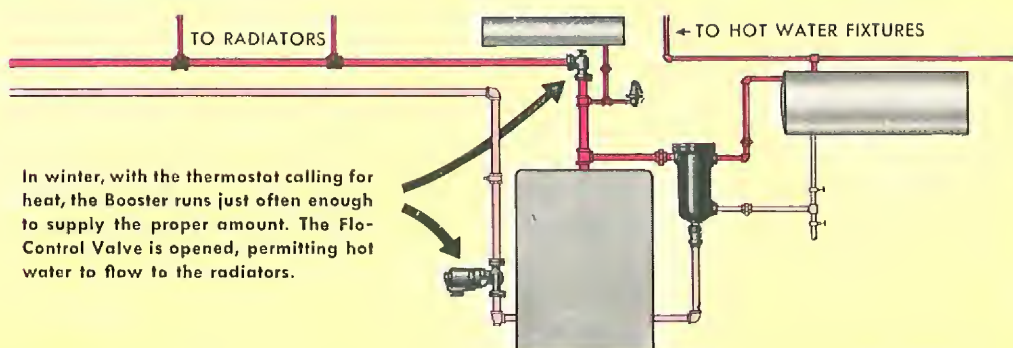


Plus . . . the Luxury of Abundant

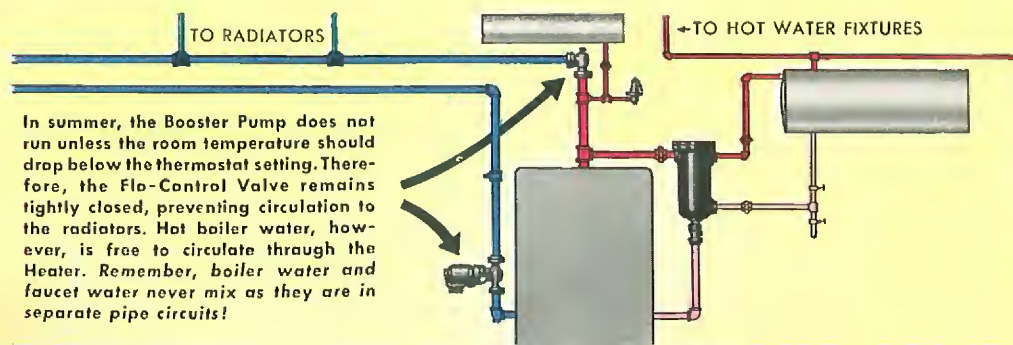


The B & G Heater consists of a coil of copper tubing encased within a cast iron or steel shell. It is connected to the boiler with pipes which permit hot water to flow through the shell and around the copper tubes.

The water for kitchen, laundry and bath flows through the copper tubes where it is heated by the surrounding hot boiler water. It then circulates to the storage tank, ready for use.



In winter, with the thermostat calling for heat, the Booster runs just often enough to supply the proper amount. The Flo-Control Valve is opened, permitting hot water to flow to the radiators.



In summer, the Booster Pump does not run unless the room temperature should drop below the thermostat setting. Therefore, the Flo-Control Valve remains tightly closed, preventing circulation to the radiators. Hot boiler water, however, is free to circulate through the Heater. Remember, boiler water and faucet water never mix as they are in separate pipe circuits!

Think of the dozens of times a day you need hot water. Certainly there is no greater modern convenience than a really hot and ever-ready supply. And certainly it must be economically produced or you can't afford to enjoy its full benefits.

You're probably planning on the convenience of automatic dish and clothes washers. But remember, these labor-savers require plenty of hot water for satisfactory operation. Showers, too, can quickly exhaust the ordinary water heater's capacity.

One of *Hydro-Flo* Heating's biggest advantages is the fact that it furnishes a year 'round supply of hot water. The Water Heater unit is an integral part of the system and provides a virtually limitless supply all around the clock and every month of the year . . . *so economically that you need never worry about the cost!*

You have a choice of either an instantaneous model which heats water as fast as it is drawn or a storage type which requires a tank in which to store the heated water.

Note that the same boiler that heats the house also heats the domestic water—no separately fired heater required. This is one of the most amazing features of a B & G *Hydro-Flo* Heating System.



Hot Water . . . all year round

It hardly seems possible that the large heating boiler could be fired in summer to heat domestic water at less expense than a separately-fired heater. Yet this is definitely the truth, as proved in thousands of installations. The greater efficiency of the large boiler makes the B & G method of heating water the least costly.

During the winter, the heating boiler is in constant use, but only a small fraction of the heat generated is used in heating the domestic water. In summer, once the boiler is brought up to the proper temperature, it can be maintained at that degree on very little fuel. Only a few short, quick operations of your automatic firing unit daily will keep the boiler at the proper temperature for heating the water for kitchen, laundry and bath.

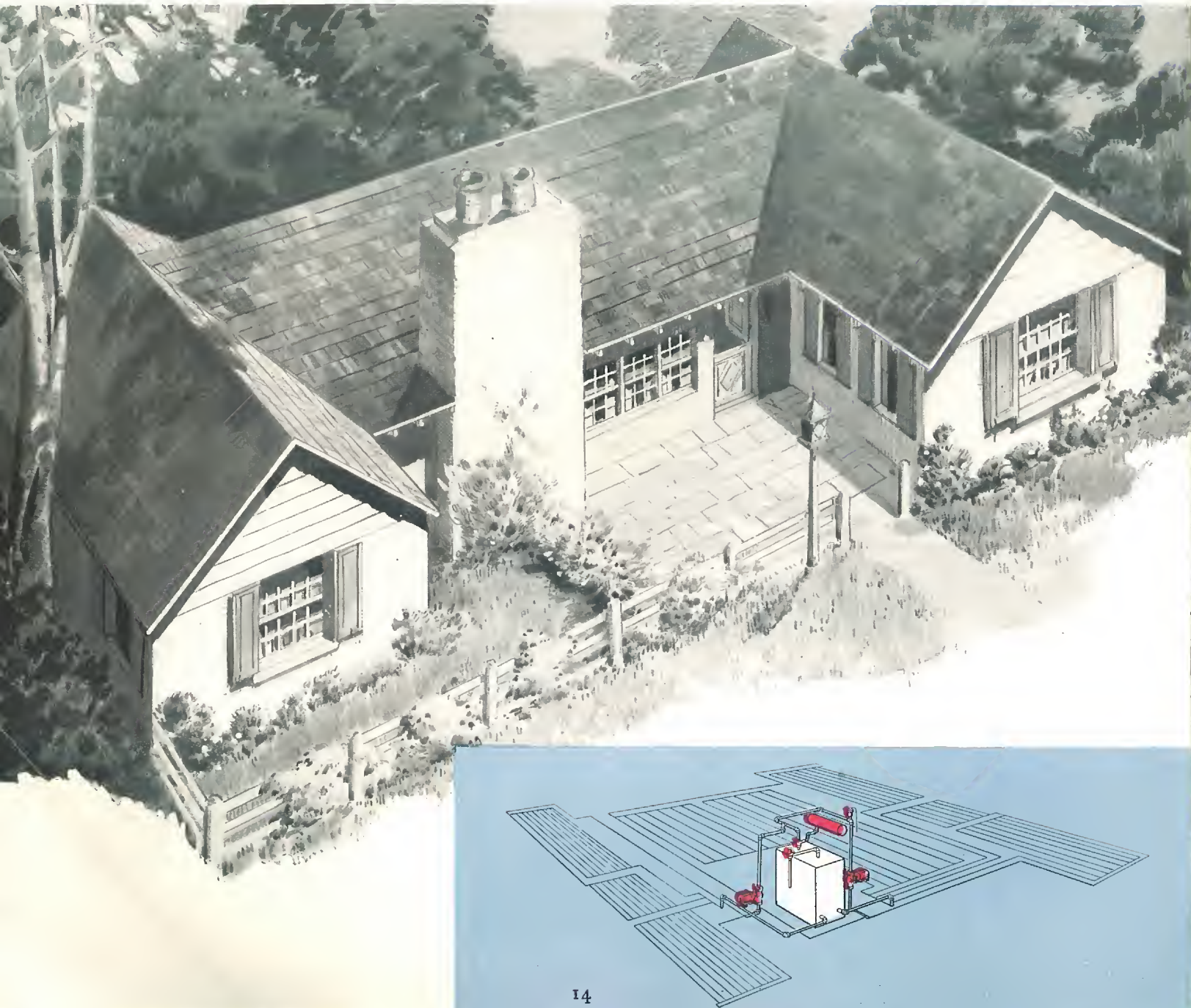
The diagram on the opposite page shows how the system can furnish hot water in summer without heating the house.



Hydro-Flo Heating Systems have universal application—there is virtually no limit to either the area or height of the installation. *Hydro-Flo* Heating made its start in small residential buildings, rapidly spreading to large homes, then to apartments, schools, churches, office buildings, factories and institutions. Today, you'll find *Hydro-Flo* Heating giving equal satisfaction in small low-cost homes, large garden apartments and huge industrial plants.

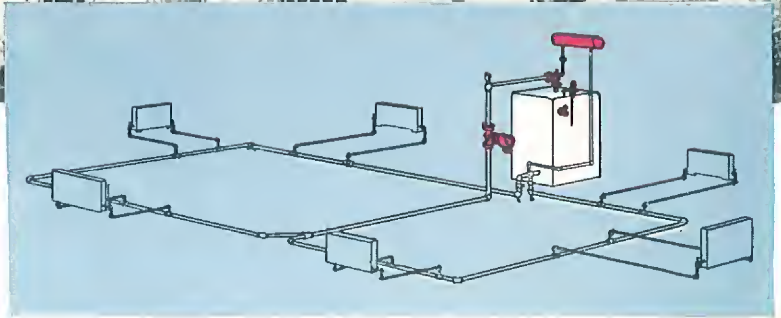
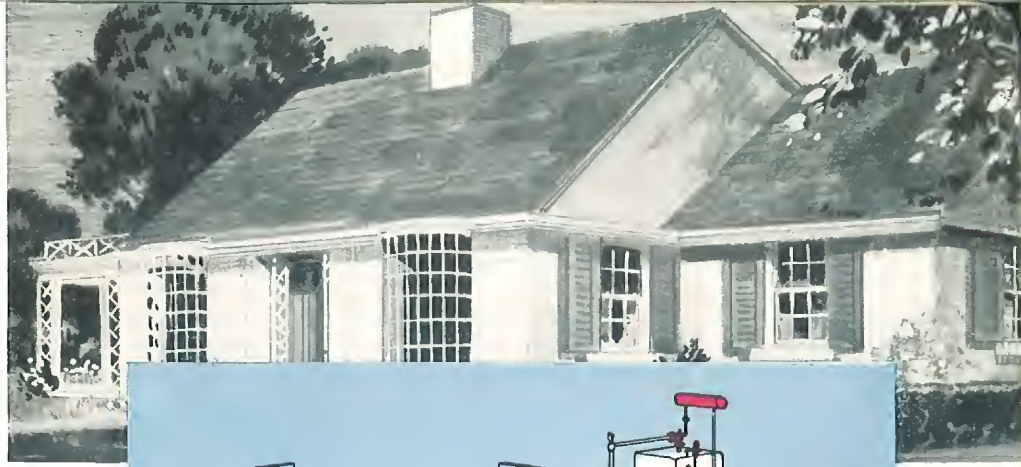
The simplicity of *Hydro-Flo* Heating equipment is a strong contributing factor to its popularity. There is only one moving unit—the motor driven pump. This pump, by virtue of years of research and actual field operation, has developed into as failure-proof a device as anything mechanical could be, requiring only an occasional oiling to keep it in operating condition. It uses little electric current and is altogether dependable.

Hydro-Flo Heat Is Adaptable to Any Type of *Home, Apartment*



Small basementless house

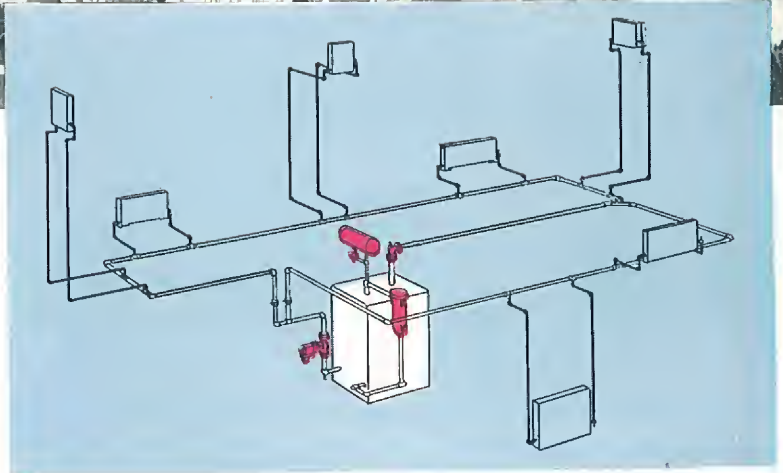
Many homes today are being built without basements, the heating equipment being installed in a utility room. B & G *Hydro-Flo* Heating is ideal in this type of building because forced circulation permits the boiler to be placed on the same level—or even above—the heat distributing units.



or Industrial Building

Two-story home with basement

With B & G *Hydro-Flo* Heating installed, your basement can be made into an attractive extra room. The boiler can be tucked into a corner, out of the way, as its location has no bearing on the satisfactory performance of a forced circulation hot water system. Maximum space for a recreation room, hobby shop, or any other purpose is thus made available.



Ranch-type house with 2-zone system

This long, low style of architecture is rapidly growing in popularity. Usually constructed without a basement, the ranch-type house is made to order for *Hydro-Flo* Heating. Only a minimum of space is required for a utility room to contain the boiler. The heating plan for this house shows a radiant panel installation with two zones.



Apartment house

Apartment house builders are turning in ever-increasing numbers to *Hydro-Flo* Heating because of its superior heat control. A zoned apartment house offers the ultimate in tenant comfort and fuel economy.

Industrial building

This plant doubled its floor space with a new addition and at the same time converted its old steam heating system to a B & G *Hydro-Flo* System. The 100% increase in building size caused a rise of only 16% in heating cost.





A warm home in the morning.



*Cheery comfort
all day long.*

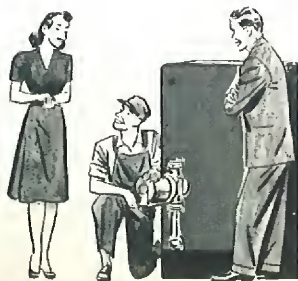
Ideal for *Modernizing* Old Hot

You don't have to build a new home in order to have the comforts of B & G *Hydro-Flo* Heating. The same equipment which is used on a new installation can be applied to your present hot water heating boiler. You won't have to rip out radiators or make any structural alterations—all work is confined to a few piping changes around the boiler. Tens of thousands of modernized installations are

in successful operation today.

Thereafter, you enjoy all the benefits of forced hot water heating. Heat is supplied to radiators instantly when needed and smoothly modulated to meet every change in the weather. No chilly underheating and no wasteful overheating. Every bit of fuel does its full duty in keeping your home in cheery comfort from Fall to Spring.

T H R E E S I M P L E



Your heating contractor first installs a B & G Booster Pump. This is the unit that provides forced circulation under accurate automatic control. It is completely dependable, quiet and uses an insignificant amount of electric power.



Next comes the Flo-Control Valve. This valve remains tightly closed except when the Booster is running, preventing any heat from rising into the radiators. Hence it protects against an "over-ride" in heat and also permits summer operation of the Water Heater.



Always plenty of
hot water.



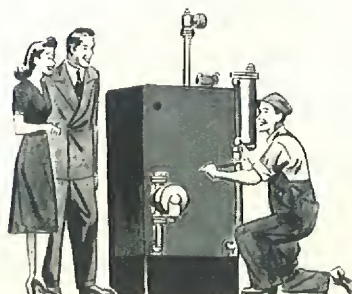
Lower fuel
bills.

Water Heating Systems

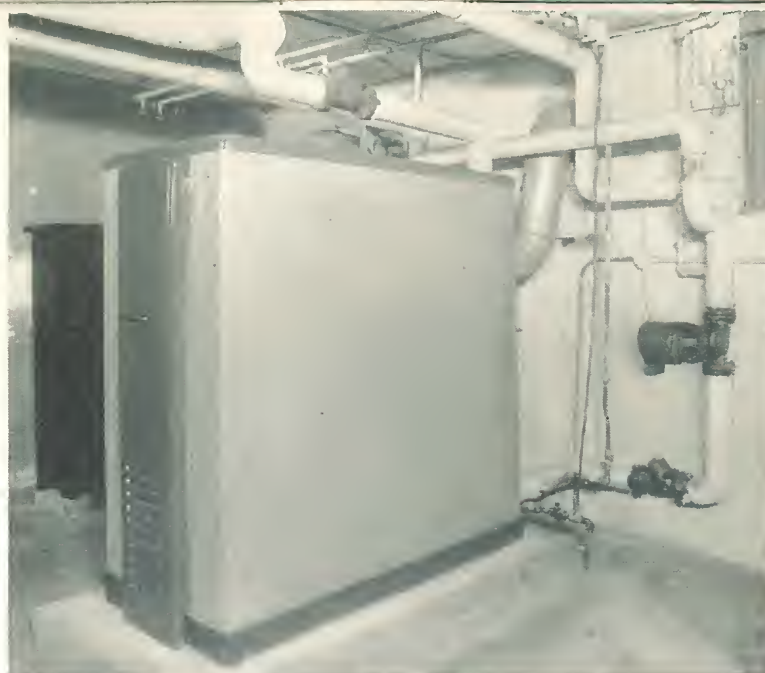
Your hot water problem is solved, too. You'll have all you can use . . . piping hot . . . 24 hours a day, all year 'round . . . and so low in cost you can use it lavishly.

Your heating contractor will be glad to give you complete information on converting your present system to B & G *Hydro-Flo* Heating.

S T E P S



Finally, the Water Heater. From this unit comes an ever-ready supply of hot water every month of the year. You never have to worry about expense because this is the low-cost way to produce an abundance of hot water.

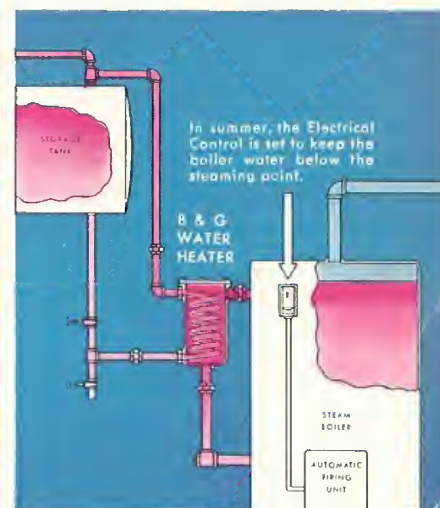
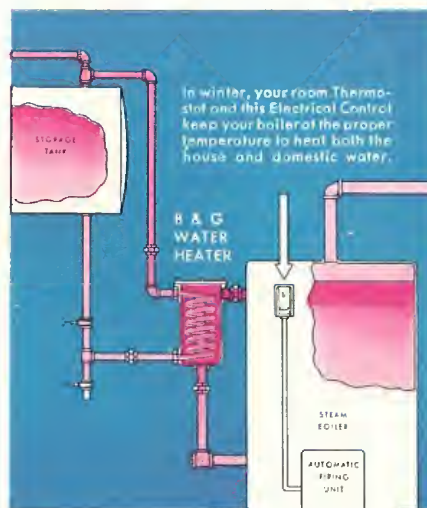


Here is a boiler modernized with B & G *Hydro-Flo* Heating equipment. Conversion is a simple job and pays big dividends in comfort, convenience and fuel savings.

Year 'round hot water, too, for homes with steam boilers

A B & G Water Heater can be installed on a steam boiler just as readily as on a hot water boiler. Records accumulated from thousands of installations show savings in water heating costs as high as 75%.

The diagrams below explain the operation of a B & G Water Heater on a steam boiler. In winter (left diagram) the boiler produces steam to heat the radiators, and at the same time, circulates hot water through the Heater for heating the domestic water. The Electrical Control in the boiler governs the burner to maintain a boiler temperature *above the steaming point!*



In summer, the Control in the boiler is set at a degree *below* the steaming point (approximately 160°-180°).

This temperature is sufficient to heat the domestic water, but since it is not hot enough to create steam, no heat enters the system. If the boiler is hand-fired, rubbish plus just a little fuel is enough to produce an ample supply of hot water. In this case, no control is needed on the boiler.



BELL & GOSSETT
Company

MORTON GROVE, ILLINOIS